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Mexican Geothermal Sector Heating Up with New Competition and Market Rules

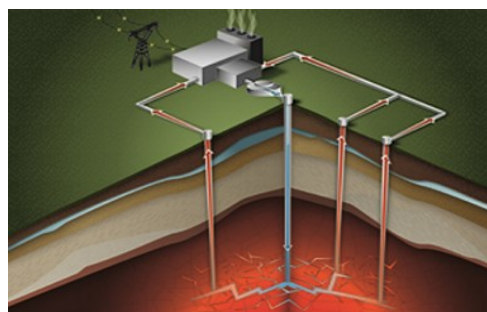
Mexico ranks fourth globally in terms of geothermal resources - estimated at 13.4 Gigawatts (GW) in potential generation - behind the United States, Philippines, and Indonesia. Mexico is also the fifth largest geothermal energy generator worldwide, with its Federal Electricity Commission (CFE) plants producing roughly 6,330 Gigawatt-hours (GWh) of power, amounting in

2015 to two percent of total power generation. Geothermal energy is renewable, using the Earth's internal heat to produce steam to generate electricity. It ranks as Mexico's third biggest clean energy source after

hydroelectric and nuclear. CFE's plants are located in the states of Baja California (Cerro Prieto), Puebla (Los Hornos), Michoacán (Los Azufres), and Baja California Sur (Tres Virgenes) see Figure 1. The Cerro Prieto plant,

with an installed capacity of 720 Megawatts (MW), is the largest geothermal plant in Latin America and the third largest in the world. Mexico's location along one of the world's largest volcanic belts gives it great geothermal capacity. Geothermal energy is constant, not intermittent like wind and solar energy, and adds reliability and firm (steady) power capacity to the grid.

(continued on page 4)



Paraguay: Electricity Sector Overhaul, An Opportunity for U.S. Business

Paraguay's electricity company (ANDE) plans to open a number of projects for open tender in early 2017 in an effort to overhaul its distribution and transmission

infrastructure and install renewable generation capacity in isolated areas of Paraguay.

Itaipu is the joint Paraguayan-Brazilian hydroelectric project that

serves as the backbone of the Paraguayan electrical system. With 14 Gigawatts (GW) of installed capacity and nearly 100 terawatt-hours (TWh) of electric-

ity production annually, it is the second most powerful dam in the world (behind Three Gorges) but the most productive in the world in overall annual output. Itaipu generation is



split equally between Paraguay and Brazil, satisfying 75 percent of Paraguay's total electricity demand and 15 percent of Brazil's. The Itaipu Treaty signed in 1973 requires Paraguay to sell its excess electricity to Brazil at a fixed price, currently well below market spot prices, until 2023. Currently Brazil pays Paraguay approximately \$600 million annually for the excess electricity. After 2023, Paraguay will be permitted to sell to other buyers at market rates, though Paraguay lacks the necessary transmission infrastructure and pass-through agreements to deliver this electricity to non-Brazilian buyers. In addition, Paraguay's own energy demand is projected to continue grow-

ing and is expected to exceed Paraguay's half of Itaipu's production by 2029, leaving the country with no extra energy to sell from the project if Paraguay does not install more generation capacity.

Yacyreta is a joint Paraguayan-Argentinian 3.1 GW hydroelectric dam that generates some 20 TWh of electricity per year. Yacyreta satisfies 12 percent of Paraguayan electricity demand and 22 percent of Argentina's, with Argentina buying all excess power from Paraguay's half of the generation, amounting to approximately \$60 million per year.

Paraguay's Electrical Overhaul, a U.S. Commercial Opportunity

Despite selling electricity to its neighbors and meeting most of its domestic demand with the Itaipu and Yacyreta dams, Paraguay cannot always deliver power widely and efficiently - particularly outside its major cities - with

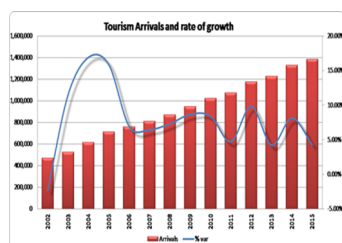
its existing outdated electrical grid. The Paraguayan government, however, is taking steps to improve electricity generation, distribution, and transmission. ANDE envisions spending around \$7 billion over the next ten years on 227 projects to upgrade the existing transmission and distribution grid and to complete 33 renewable energy generation projects. In the next few months, ANDE expects to open bidding for a 14 MW hydroelectric plant along the Ypane river in Concepción Department and a 1 MW solar panel project to serve Bahia Negra in the Chaco's Alto Paraguay Department. ANDE is also planning construction of three substations near Asuncion to serve the immediate vicinity of the capital, where 70 percent of Paraguay's electricity is consumed.



Paraguay's national electricity provider, ANDE, provided a list of projects open for international competitive bidding (ICB) early 2017. U.S. companies need a branch in Paraguay or a local representative to participate in the ICB process. All requests for bids are published on the ANDE website (www.andegov.py). Point of Contact at the U.S. Embassy is Economic Officer, Rocco Costa at: costar@state.gov.

Nicaragua: Growing Tourism Opens Opportunities for U.S. Business

Tourism has grown to be a major component of Nicaragua's economy. The number of visitors has doubled in the past decade, growing about six percent annually. Revenues in the sector increased fivefold over the same time period. The Chamber of Small Tourism Businesses (CANTUR) estimates that tourism revenue almost reached \$600 million in 2016, equal to about five percent of the country's GDP.



The Nicaraguan Association of Investors and Developers (ANID) cites two main drivers prompting the initiation of major tourism in Nicaragua. First, the arrival of charter flights and cruise ships for the first time since 2000 has begun to raise awareness among U.S. tourists of the coun-

try's potential. Second, the "discovery" of the Tola beaches in southwestern Nicaragua by U.S. investors and surfers prompted initial development of Pacific coast properties, establishing an important center for the tourism industry to share best practices and spread to other parts of the country. While Costa Rica remains the more popular destination in the region, hosting 2.6 million visitors in 2015, Nicaragua has begun to attract some of Costa Rica's tourism business due to its lower pricing structure.

If you build it...

Today, a renewed government focus is elevating the profile of Nicaragua tourism. In October 2016, the government of Nicaragua identified the tourism industry as its third most important investment and economic development priority for the next five years. The investment plan details nine tourism infrastructure projects costing about \$1 billion, some financed and others seeking

financing, including ports, airports, and highway development.

To incentivize these and other development projects, the Government passed a Public-Private Partnerships Law (935/2016) in October 2016 that establishes a framework for collaboration with private companies in the design, construction, and management of public investments. This complements the existing Tourism Industry Incentives Law (306/1999), which includes import duty and VAT tax exonerations for equipment, materials, and products in the hospitality sector among other benefits.

Opportunities for U.S. Businesses

Over half of all visitors to Nicaragua are from the United States, creating built-in demand for U.S. brands and products. The infrastructure projects noted above represent an opportunity for

construction firms, particularly in specialized concrete, heavy machinery, and coatings. Nicaraguans value the quality of U.S.-made goods. In 2016, a delegation of 20 Nicaraguan firms participated in the National Restaurant Association Trade fair, purchasing at least \$5 million in hotel supplies, restaurant equipment, and machinery. Nicaraguan firms have expressed additional interest in U.S. franchises, commercial kitchen equipment, spa, and wellness products.

U.S. Embassy Managua will host a Direct Line call in February for U.S. firms interested in learning more about this growing market. For more information about the upcoming Direct Line event, please e-mail: managuaecon@state.gov.

Nicaragua Priority Tourism Projects			
Name	Location	Cost (\$M)	Financed?
Transmission Line Development	Various	\$449.2	Yes
International Airport Expansion	Managua	\$133.5	Yes
Railway Construction	Managua, Masaya, Granada	\$130.0	
Pacific Coast Highway	Rivas, Carazo	\$120.0	
National Airline Development	Managua	\$49.0	Yes
Tourist Center Remodeling	Various	\$44.6	Partial
Cruise Ship Terminal	San Juan del Sur	\$40.0	Partial
Tourist Route Development	Various	\$20.3	
Airport Terminal Development	Bibí	\$7.0	
Total		\$993.6	



Mexico (continued from page 1)

A Clear Regulatory Framework Aims to Boost Competition and Innovation

State-owned CFE was the only company allowed to develop geothermal resources prior to Mexico's broad energy reform, but the market is now open to private sector competition and new investments. The 2014 Geothermal Energy Law allows the government to award private companies three-year exploration permits and 30-year production concessions. Since July 2015, the Energy Ministry (SENER) has awarded 13 exploration permits and five concession contracts to CFE, covering areas with a combined generation potential of 448 MW. SENER also awarded eight exploration permits to private Mexican companies and the first concession for geothermal development to a private Mexican company, which plans to invest approximately \$240 million in a geothermal power generation project in Nayarit.

SENER and the Mexican Science and Technology Commission (CONACYT) established the Mexican Center for Geothermal Energy Innovation (CeMIE-Geo) in

2016 in Ensenada, Baja California, to promote Mexican research and development in the field. SENER and CONACYT invested \$54 million in the center, to bring together academia and industry to foster knowledge and technical skills, develop the geothermal energy sector in Mexico, and contribute to sustainable economic growth.

To address high upfront costs and subsurface data information challenges, SENER is using new mapping and data tools, as well as a nation-wide renewable energy inventory (INERE), to provide information on Mexico's renewable resources and improve the country's natural resource management. INERE is a statistical and geographic information system, available for public use, collecting data and creating maps of electricity generation, natural resources, and wind, solar, geothermal, and biomass potential. Mexico's primary development bank (NAFIN) also created a \$120 million "Insured Exploration Credit" fund for geothermal companies to reduce exploration risks and encourage investors.

The U.S. Department of Energy (DOE) and the U.S. Foreign Commercial Service will host a bilateral U.S.-Mexico Geothermal Market Opportunities Workshop to bring together public and private sector stakeholders from the United States and Mexico to discuss new opportunities for investment and potential collaboration in the development of Mexico's geothermal energy resources.



Paraguay's Flagship Technological Park Seeks Closer U.S. Ties

Itaipu Binacional, the Paraguayan-Brazilian entity that manages Itaipu Dam, created Itaipu Technological Park (PTI in Spanish) as an independent laboratory located adjacent to the Itaipu hydroelectric dam, Paraguay's flagship renewable energy operation and the world's most productive hydroelectric dam. PTI supports engineering and other technological projects needed by the dam. However, in addition to services provided to the dam, PTI focuses on three other issues: renewable energy, human prostheses, and biotech

development; and seeks U.S. partners to continue its recent progress.

PTI encompasses three innovation centers. The Center for Energy Technologies does research on off-grid renewable energy projects that could serve as a model for powering remote Paraguayan communities. Engineers installed combination solar and wind power pilot systems on the Joel Estigarribia and Pablo Lagerenza military bases in the remote Chaco region. As a result, these bases now enjoy 24-hour electricity versus their previous die-

sel generator setup that only allowed three hours per day.

The Center for Innovation in Assistive Technologies focuses on robotics, especially with medical applications, and has produced a number of electro-mechanical prosthetic arms.

Founded in 2016 and the newest addition to the park, the Center for Biotech Innovation is designing a facility for drying and milling mandioca (yucca) root to study potential uses of the flour. The team aims to

hire specialists in genetics, aquaculture, phytozoology, and virology and focus on further projects to benefit small-scale farmers.

PTI will also host its first International Aerospace Conference in Asuncion, focusing on satellites and drones/unmanned aerial vehicles. PTI hopes the conference will boost their long-term plans to construct and launch a satellite.

U.S. Embassy Asuncion Economic Officer Rocco Costa (CostaR@state.gov) is the point of contact for more information.

DIRECT LINE For American Business

"Doing Business in Ecuador in the Post-Correa Era"


Hosted by: U.S. Ambassador to Ecuador Todd C. Chapman

February 1, 2017: 11:00 am - 12:00 pm est

Please RSVP at www.state.gov/directline by Monday, January 30, 2017

The U.S. Embassy in Quito invites U.S. companies of all sizes to participate in a Direct Line Webinar to discuss expectations for Ecuador's investment and business climate in the post-Correa era. Following presidential elections scheduled for February 19, a new president will take office in May 2017. Join Ambassador Todd C. Chapman via webinar for a discussion of new opportunities and challenges to doing business in Ecuador as a result of the upcoming change in administration. Webinar is limited to first 100 registrants.

In order to encourage an open discussion, Direct Line Webinars are not open to press. Information and conversation on the webinar are not treated as business confidential. For press related inquiries or questions contact the Embassy Press section at contacto.usembuio@state.gov For any general questions, please contact DirectLineNotification@state.gov





Other resources for anyone interested in overseas business news:

For **Caribbean and Latin American Markets**, the Department of Commerce has many resources to assist U.S. firms including **market research**, **trade show calendars**, **trade delegation calendars**, etc. Check out their “Trade Americas” and “Look South” websites:

<http://export.gov/tradeamericas/index.asp>

<http://export.gov/tradeamericas/looksouth/index.asp>



The U.S. Government’s main website to assist U.S. businesses at home and abroad. URL at <http://business.usa.gov/>

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Contact us at WHA-OBI@state.gov

All issues of Overseas Business Insights are available upon request. Just email us at the above address.



The Business Information Database System (BIDS) is a portal built to help U.S. businesses learn about significant international commercial opportunities. The site connects U.S. business to detailed information about each project as well as information to contact U.S. embassies overseas. URL at <http://bids.state.gov/>



The Direct Line program provides a unique opportunity for American businesses, particularly small- and medium-sized enterprises, to engage directly via webcast with U.S. Ambassadors overseas. The program is open to U.S. companies – whether they are already in the country where the Ambassador serves or if they are interested in expanding their businesses there. Webcasts will vary in topic according to the specific needs for business in a given country. URL at <http://www.state.gov/directline/>

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